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(54) Title: SKIN CARE PRODUCTS WITH IMPROVED SKIN AND MATERIAL SOFTNESS

(57) Abstract: This invention relates to products comprising a porous or absorbent sheet, in particular a wipe, and a liquid, in particular an oil-in-water emulsion, wherein the liquid contains C<sub>12-30</sub> carboxylic acid mono-or diglyceride.



**WO 02/072052 A2**

## **Skin Care Products with Improved Skin and Material Softness**

### **Background of the Invention**

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This invention relates to products comprising a porous or absorbent sheet, in particular a wipe, and a liquid, in particular an oil-in-water emulsion, wherein the liquid contains a C<sub>12-30</sub> carboxylic acid mono- or diglyceride, which in particular is glyceryl mono- or dioleate.

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Wipe products have become an important product category that has found a wide variety of applications for adults and babies. Examples include face or body cleansing wipes, wipes for skin treatment, and skin conditioning wipes.

15

Over the last couple of decades so-called wet wipes have become successful as products particularly suited for these applications. These products typically are manufactured by impregnating sheets made of non-woven fabric with a suitable lotion.

Recent innovations in the wipes area included improvements in the fabric, in the impregnating liquid as well as in product presentation.

20

Initially, wet wipe products were made of traditional non-woven materials based on paper making technology (pulp based products). These products were well accepted but deficient in softness of the fabric material. The introduction of the 'spunlace' non-woven technology offered products that, compared to traditional paper based products, were superior in terms of softness. This is mainly due to (i) the use of long soft fibres (most frequently rayon and PET / PP or a mixture of these fibres) in the spunlace process and (ii) the fact that during the spunlace process no binder is added to the fabric.

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Another innovation was the introduction of the 'Pop-up' technology that offered advantages as regards the dispensing of individual wipes.

30

Wipes and similar products having particularly useful properties have been described in the following references.

WO-99/ 21532 describes cleansing and conditioning products for skin or hair having improved fragrance delivery. These products comprise a water insoluble

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substrate which can be woven, non-woven or other, a lathering surfactant and a fragrance releasing complex. WO-99/ 55303 discloses dry personal care cleansing articles comprising a water insoluble substrate, a lathering surfactant and an active component. WO 00/63503 discloses skin-friendly absorbent articles comprising an  
5 outer surface having a composition that enhances skin barrier.

US-6,153,208 concerns dry personal cleansing articles comprising particular multi-layered substrates. US-5,951,991 relates to dry personal cleansing articles comprising water insoluble substrate, a lathering surfactant and a conditioning  
10 emulsion.

Irrespective of its end use the softness of the wipe product is of primary importance to the consumer. Softness of the wipe material on the one hand, and perceived softness of the skin after usage of the wipe on the other, are important consumer benefits. This in particular is the case for applications on babies.  
15

Almost all wipe products currently on the market are based on non-wovens as the fabric material. However, since non-wovens are manufactured in large-scale processes that are relatively inflexible and also require high capital investment it is difficult and often not attractive to further improve the softness of the original  
20 substrate.

A second approach in improving the softness of non-woven fabrics is to add fabric softeners to either the finished product or to the fibres used as raw materials. This approach has been taken in many applications of dry non-wovens. Particularly in  
25 dry facial tissue products and toilet paper the softness has been significantly improved via the addition of 'fabric softeners'. Most of these softeners are silicon-based compounds or derivatives thereof.

In spite of these improvements there is still a need to improve softness of wipe  
30 products and to provide wipe products that result in the skin having a softer feel after application of the wipe. Providing such products is an object of this invention.

This object is attained by the products of this invention that contain a lotion that has a positive effect on the softness of the fabric as well as on the softness of skin after use. Although as mentioned above, the addition of softeners has been used intensively in dry wipe products it has been found that the agents used in the products according to  
5 the invention also improve the softness of wet wipes.

### Summary of the Invention

10 The present invention concerns a product comprising a porous or absorbent sheet and a composition that contains a C<sub>12-30</sub> carboxylic acid mono- or diglyceride. In particular, the invention concerns a product comprising a porous or absorbent sheet and a composition that contains a combination of a C<sub>12-30</sub> carboxylic acid mono- or diglyceride and a C<sub>8-20</sub> alkyl glucoside, the latter preferably being coco-glucoside.

15 In a specific embodiment, the present invention concerns products comprising a porous or absorbent sheet and a composition that contains glyceryl mono- or dioleate. Preferably, the composition additionally contains a C<sub>8-20</sub> alkyl glucoside, more preferably coco-glucoside.

20 In a particular aspect the invention provides a product as defined herein wherein the composition contains a saturated C<sub>12-30</sub> alkanolic acid glyceride or wherein the composition contains a combination of a saturated C<sub>12-30</sub> alkanolic acid glyceride and a C<sub>8-20</sub> alkyl glucoside.

25 In a further particular aspect the invention provides a product as defined herein wherein the composition contains an unsaturated C<sub>12-30</sub> alkanolic acid glyceride or wherein the composition contains a combination of an unsaturated C<sub>12-30</sub> alkanolic acid glyceride and a C<sub>8-20</sub> alkyl glucoside.

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Of particular interest are compositions that contain only or predominantly C<sub>12-30</sub> carboxylic acid monoglyceride, in particular only or predominantly glyceryl monooleate.

- 5           In a particular embodiment, the composition is a liquid. It can be coated onto or impregnated into said sheet.

10           The composition can be a water-based formulation, in particular an aqueous solution. The composition preferably is emulsion-based in which the emulsion can be water-in-oil or oil-in-water or can be of more complex nature such as water-in-oil-in-water. Preferably it is an oil-in-water emulsion, more preferably an oil-in-water emulsion prepared according to the phase inversion technique.

15           In an alternative aspect this invention concerns the use of glyceryl mono- or dioleate or of a combination of the latter with a C<sub>8-20</sub> alkyl glucoside, in particular with coco-glucoside, or the use of a composition containing said monooleate or said combination, to improve the softness of a porous or absorbent sheet.

20           In a preferred aspect this invention concerns the use of C<sub>12-30</sub> carboxylic acid mono- or diglyceride or of a combination of the latter with a C<sub>8-20</sub> alkyl glucoside, in particular with coco-glucoside, or the use of a composition containing said C<sub>12-30</sub> carboxylic acid mono- or diglyceride or said combination, to improve the softness of a porous or absorbent sheet.

25           Or alternatively there is provided a method of improving the softness of a porous or absorbent sheet, which method comprises applying a C<sub>12-30</sub> carboxylic acid mono- or diglyceride, or applying a combination of the latter with a C<sub>8-20</sub> alkyl glucoside, in particular with coco-glucoside, or applying a composition containing said C<sub>12-30</sub> carboxylic acid mono- or diglyceride or said combination, to said sheet. In a preferred aspect the composition in said use or method is liquid or is an emulsion as described herein.

30

          Or preferably, there is provided a method of improving the softness of a porous or absorbent sheet, which method comprises applying glyceryl mono- or dioleate or applying a combination of the latter with a C<sub>8-20</sub> alkyl glucoside, in particular with

coco-glucoside, or applying a composition containing said monooleate or said combination, to said sheet. In a preferred aspect the composition in said use or method is liquid or is an emulsion as described herein.

5           In a further aspect the invention concerns the use of a product as defined herein to improve skin softness. Or alternatively, the invention concerns a method to improve skin softness which comprises applying a product as defined herein to the skin.

10 Detailed Description of the Invention

Whenever used in this description and claims, any percentage is weight by weight (w/w).

15           The sheet of absorbent or porous material for use in the products of this invention may take the form of a tissue, a wipe, towel, towelette, and the like. The material may be flushable. As used herein, by 'flushable' is meant that the material will pass through at least 3 meters of waste pipe in two toilet flushes. The material may also be biodegradable.

20 Sheet materials that can be used can be mono or multi-layered, woven or non-woven. They can be made of one or of several materials. Particularly preferred are non-woven materials that have a web structure of fibrous or filamentous nature, in which the fibres or filaments are distributed randomly or with a certain degree of orientation, 25 the former being obtainable by air-laying or by certain wet-laying processes, the latter by other wet-laying or by carding processes. The fibres or filaments can be natural, for example wood pulp, wool cotton, linen and the like, or synthetic, for example polyvinyls, polyesters, polyolefins, polyamides and the like.

Typically they have a weight per square meter in the range of 10 to 80 g/m<sup>2</sup>, in particular of 20 to 70 g/m<sup>2</sup>. Particular materials are of the non-woven type. Based on the raw material that has been used, two different types of products can be distinguished.

A first type of carriers is paper based. The raw materials for these carriers are made almost exclusively of cellulose-based fibres or filaments from plant cellular sources (pulp). These can be available from fresh wood-shavings or from recycled material (recycled paper). In a number of wipe applications, such as baby wipes, wipes for cleansing, wet paper towels and the like, high wet strength or firmness of the non-woven web is a desirable attribute. This can be achieved by the addition of binding materials. Examples of such materials are the so-called wet strength resins. In some cases additives are added in order to increase the softness of the end product.

10 In a second type use the web is made mainly of staple fiber, e.g. based on cotton, wool, linen and the like.

Commercial products are made of cellulose fibers, synthetic fibers or mixtures of both. Polyester and polypropylene are known as suitable polymers for the preparation of synthetic fibers. Also in these products binders can be used to increase the firmness of the non-woven fabric.

20 Webs of increased strength can be obtained by using the so-called spunlace or hydro-entanglement technique. In this technique the individual fibers are twisted together so that an acceptable strength or firmness is obtained without using binding materials. The advantage of the latter technique is the excellent softness of the non-woven material.

25 Non woven materials that are made of a mixture of pulp and staple fiber are also known. Such materials are available with binding materials, in particular those mentioned above, or without binding materials. In the latter instance the non-woven is preferably made by the spunlace or hydro-entanglement procedure.

30 In a preferred embodiment of the present invention, the carrier material is made of cellulose pulp with a small amount of binding material. The amount of binder in the carrier material is in the range of 5 to 20 % (w/w).

In a particularly preferred embodiment the non-woven fabric is prepared by the water entanglement procedure and does not contain binding material.

The absorbing ability of the carrier material is of particular interest with regard to the applications envisaged by the present invention. During production the impregnating solution should be taken up quickly by the carrier. In certain  
5 embodiments of this invention the wipes will be packed in a stack of a plurality of wipes. In this instance the absorbing ability of the non-woven fabric should be such that a chromatographic effect (sinking down of the lotion) in the stack is avoided during storage. On the other hand it should be guaranteed that during the usage of the wipe the lotion is delivered evenly to the skin.

10

The absorbing capacity of the carrier material is determined essentially by three different parameters: the surface weight of the carrier material, the nature of the raw material used in the manufacture and the manufacturing process used.

15 For the applications according to the invention the carrier materials typically have a surface weight from 10 g/m<sup>2</sup> to 80 g/m<sup>2</sup>, preferably from 30 to 70 g/m<sup>2</sup> and more preferably from 40 to 60 g/m<sup>2</sup>. The selection of the raw material of which the non-woven carrier is made depends on the manufacturing procedure. Typically in the manufacture of non-woven carriers by the hydro-entanglement process, use is made of  
20 mixtures of cellulose fibers and synthetic fibers. The relative quantity of synthetic fibers in the non-woven fabric is from 0 to 100 % and preferably is between 10 and 70 %, more preferably in the range of 30 to 50% (all percentages being w/w).

The products of the present invention further comprise a composition  
25 containing a C<sub>12-30</sub> carboxylic acid mono- or diglyceride. Or said composition contains a combination of a C<sub>12-30</sub> carboxylic acid mono- or diglyceride and a C<sub>8-20</sub> alkyl glucoside.

Preferably, the products of the present invention further comprise a composition containing glyceryl mono- or dioleate, preferably a composition containing glyceryl  
30 mono- or dioleate and a C<sub>8-20</sub> alkyl glucoside, in particular coco-glucoside.

As used herein the term 'C<sub>12-30</sub> carboxylic acid' refers to straight (linear) or branch chained alkanoic acids having about 12 up to about 30 carbon atoms. These



acids may be saturated or unsaturated, having one or more double bonds, e.g. one, two, three, four or more double bonds. They may also contain one or more, e.g. two, hydroxy groups. These acids comprise the so-called fatty acids, i.e. acids derived from naturally occurring fats. The term C<sub>12-30</sub> carboxylic acid is meant to comprise pure acids or mixtures thereof.

The term 'C<sub>12-30</sub> carboxylic acid mono- or diglyceride' is meant to comprise a C<sub>12-30</sub> carboxylic acid monoglyceride or a C<sub>12-30</sub> carboxylic acid diglyceride alone, or a mixture of a C<sub>12-30</sub> carboxylic acid monoglyceride and a C<sub>12-30</sub> carboxylic acid diglyceride. The quantity of mono- and/or diglyceride in such mixture may vary, it can be between 0 and 100 %. Preferred are mixtures that contain more than 50 % of monoglyceride, in particular more than 70 % of the latter. Of particular interest are compositions containing only or predominantly a C<sub>12-30</sub> carboxylic acid monoglyceride. 'Only' in this context means that the diglyceride is absent. 'Predominantly' in this context means that only small amounts of C<sub>12-30</sub> carboxylic acid monoglyceride are present, for example C<sub>12-30</sub> carboxylic acid mono- and diglyceride mixtures containing at least 80 %, in particular at least 90 %, more in particular at least 95 % or even at least 99 % of C<sub>12-30</sub> carboxylic acid monoglyceride.

A particular subgroup of a C<sub>12-30</sub> carboxylic acid mono- or diglycerides are those derived from saturated C<sub>12-30</sub> carboxylic acids, more in particular from linear saturated C<sub>12-30</sub> carboxylic acids.

A further particular subgroup of a C<sub>12-30</sub> carboxylic acid mono- or diglycerides are those derived from unsaturated C<sub>12-30</sub> carboxylic acids, more in particular from linear unsaturated C<sub>12-30</sub> carboxylic acids. Further subgroups of these have one, two, three, four or more double bonds.

A preferred subgroup of C<sub>12-30</sub> carboxylic acid mono- or diglycerides comprises those derived from the group of so-called 'essential' fatty acids. These are fatty acids derived from essential fats.

Preferred subgroups of the above mentioned group of C<sub>12-30</sub> carboxylic acid mono- or diglycerides, or of the subgroups of C<sub>12-30</sub> carboxylic acid mono- or

diglycerides as mentioned or defined herein, comprises those wherein the carboxylic acid has from about 16 to about 22 carbon atoms, more preferably from about 16 to about 20 carbon atoms, still more preferably from about 16 to about 18 carbon atoms. Of particular interest are those containing 18 carbon atoms.

5

Particularly preferred among the groups and subgroups of carboxylic acid mono- or diglycerides mentioned or defined herein are the carboxylic acid monoglycerides.

10

Most preferred are:

- glyceryl monopalmitate (Palmitic acid C16)
- glyceryl monostearate (Stearic acid C18)
- glyceryl monoarachinate (Arachinic acid C20)
- glyceryl monopalmitoleate (Palmitoleinic acid C16)
- 15 -glyceryl monolinolate (Linolic acid C18)
- glyceryl monolinolenate (Linolenic acid C18)
- glyceryl monoelaeostearate (Elaeostearinic acid C18)

20

Examples of saturated C<sub>12-30</sub> carboxylic acid mono- or diglycerides are the following:

- glyceryl mono- or dilaurate (Lauric acid C12)
- glyceryl mono- or ditridecanate (Tridecanoic acid C13)
- glyceryl mono- or dimyristate (Myristic acid C14)
- glyceryl mono- or dipalmitate (Palmitic acid C16)
- 25 -glyceryl mono- or distearate (Stearic acid C18)
- glyceryl mono- or diarachinate (Arachinic acid C20)
- glyceryl mono- or dibehenate (Behenanic acid C22)
- glyceryl mono- or dilignocerinate (Lignoceric acid C24)
- glyceryl mono- or dicerotinate (Cerotinic acid C26)
- 30 -glyceryl mono- or dimelissinate (Melissinic acid C30).

Examples of mono-unsaturated C<sub>12-30</sub> carboxylic acid mono- or diglycerides are the following:

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- glyceryl mono- or dipalmitoleate (Palmitoleic acid C16)
- glyceryl dioleate (Oleic acid C18)
- the mono-unsaturated analogs of glyceryl mono- or diarachinate (derived from the mono-unsaturated analog of Arachinic acid C20)
- 5 -glyceryl mono- or dierucate (Erucaic acid C22).

Examples of di-unsaturated C<sub>12-30</sub> carboxylic acid mono- or diglycerides are the following:

- glyceryl mono- or dilinolate (Linolic acid C18), which belongs to the so-called group of 'essential fatty acids';
- 10 -the di-unsaturated analogs of glyceryl mono- or diarachinate (based on the di-unsaturated analog of Arachinic acid C20)

Examples of tri-unsaturated C<sub>12-30</sub> carboxylic acid mono- or diglycerides are the following:

- glyceryl mono- or dilinolenate (Linolenic acid C18) which belongs to the so-called group of 'essential fatty acids';
- glyceryl mono- or dielaeostearate (Elaeostearinic acid C18) which belongs to the so-called group of 'essential fatty acids'.

20

Examples of tetra-unsaturated C<sub>12-30</sub> carboxylic acid mono- or diglycerides are the following:

- glyceryl mono- or diarachidonate (Arachidonic acid C20) which belongs to the so-called group of 'essential fatty acids'.

25

Examples of mixtures of C<sub>12-30</sub> carboxylic acid mono- or diglycerides are the following:

- glyceryl mono- or dilanolate (Lanolic acids).

- 30 Lanolic acid is a mixture of 32 different fatty acids which can be obtained by molecular distillation from cleaned 'woolwax'-acids.

Also comprised by the term carboxylic acid diglycerides are mixed diglycerides, i.e. diglycerides composed of two different carboxylic acid rests. These mixed diglycerides also comprise (mono-C<sub>12-30</sub> carboxylic acid acid)(mono-oleic acid) glycerides. An example thereof is (mono-palmitoleic acid)(mono-oleic acid) glyceride.

5

The term C<sub>12-30</sub> carboxylic acid mono- or diglycerides also comprises mono- or diglycerides derived from mixtures of carboxylic acids, in particular mixtures of carboxylic acids derived of naturally occurring fats, in particular of the so-called essential fats.

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In a preferred embodiment, the compositions for use in the products of the invention contain glyceryl mono- or dioleate. The latter can also be referred to as oleic acid monoglyceride or oleic acid diglyceride. The term glyceryl mono- or dioleate is meant to comprise glyceryl monooleate or glyceryl dioleate alone, or a mixtures thereof.

15 The quantity of mono- and diglyceride in such mixture may vary, it can be between 0 and 100 %. Preferred are mixtures that contain more than 50 % of monoglyceride, in particular more than 70 % of the latter. Of particular interest are compositions containing only or predominantly glyceryl monooleate. 'Only' in this context means that the glyceryl dioleate is absent. 'Predominantly' in this context means that only  
20 small amounts of glyceryl monooleate are present, for example in case of mono- and dioleate mixtures containing at least 80 %, in particular at least 90 %, more in particular at least 95 % or even at least 99 % of glyceryl monooleate.

The compositions in the products of the invention in particular are liquid  
25 compositions. They can be water-based formulations, in particular they can take the form of aqueous solutions. The liquids preferably are emulsion-based. These liquid compositions, which also are referred to as 'lotions', preferably are of aqueous nature.

Preferably they are emulsion-based. The emulsions can be oil-in-water or water-  
30 in-oil emulsions, or be of more complex nature such as water-in-oil-in-water. Preferred are oil-in-water emulsions, more in particular oil-in-water emulsions prepared according to the phase inversion technique.

The compositions for use in the products of the invention contain C<sub>12-30</sub> carboxylic acid mono- or diglyceride. The amount of the latter in particular is in the range from 0.01 to 2 %, in particular from 0.015 to 1 %, preferably from 0.0175 to 0.5 %, more preferably in the range from 0.0175 to 0.335 %, or from 0.02 to 0.5 % still more preferably from 0.08 to 0.2 %.

The same applies to the amount of glyceryl mono- or dioleate in the preferred compositions for use in the products of the invention.

In a particular embodiment the compositions for use in the products of the invention additionally contain a fatty alcohol glucoside, in particular a C<sub>8-20</sub> alkyl glucoside, more in particular a C<sub>8-16</sub> alkyl glucoside, preferably coco-glucoside. These compounds are also referred to as 'alkyl glycosides' or 'coco-glycoside'.

The amount of said glucoside in the composition in particular is in the range from 0.01 to 2 %, in particular from 0.015 to 1 %, preferably from 0.0175 to 0.5 %, more preferably in the range from 0.0175 to 0.335 %, or from 0.02 to 0.5 % still more preferably from 0.08 to 0.2 %.

All percentages in this and the preceding paragraph are w/w percentages.

As used herein C<sub>8-20</sub> alkyl or C<sub>8-20</sub> alkyl refers to straight or branch chained hydrocarbon radicals, saturated or unsaturated, having from about 8 to about 20 or from about 8 to about 16 carbon atoms, including mixtures thereof. C<sub>8-20</sub> alkyl or C<sub>8-16</sub> alkyl in particular is derived from fatty alcohols. Examples of C<sub>8-16</sub> alkyl are capryl, 2-ethylhexyl, capriny, lauryl, isotridecyl, myristyl, palmoleyl, cetyl, and the like. C<sub>8-20</sub> alkyl comprises these radicals as well as stearyl, isostearyl, oleyl, linolenyl, linolyl, and the like.

The term 'alkyl glucoside' generally is used in the art to refer to alkylated mono- or polyglucosides (also referred to as oligoglucosides in case of low degrees of polymerisation) or mixtures thereof. The latter also includes alkylation products of technical mixtures of glucosides. The average number of glucose units in the glucosides can be represented by an index number that usually is referred to as 'oligomerisation grade'. Typical oligomerisation grades are in the range of 1 to 10, in

particular in the range of 1 to 6, more in particular in the range of 1 to 3. Preferred oligomerisation grades are in the range of 1.1 to 3, or less than 1.7, more preferred grades are in the range of 1.2 to 1.4. Alkyl glucosides and preparation processes are described for example in WO-01/09153. The alkyl glucosides can be obtained by  
5 reacting a suitable alcohol with glucose. In this reaction, glucose molecules may react with each other thus forming polyglucosides. By controlling the reaction conditions the amount and nature of polyglucosides in the end product can be controlled.

The ratio of the amount of glyceryl mono- or dioleate to the fatty alcohol  
10 glucoside in the compositions for use in the products of the invention is in the range from 2 : 1 to 1 : 2, preferably in the range from 1.5 : 1 to 1 : 1.5, most preferably said ratio is about 1 : 1.

A particularly suited combination is that which is a mixture of 20 to 40 % of  
15 C<sub>12-30</sub> carboxylic acid glyceride, 20 to 40 % of C<sub>8-20</sub> alkyl glucoside and water. This particular mixture is added to the compositions in an amount in the range from 0.1 to 1 %, preferably from 0.1 to 0.5 %, more preferably from 0.25 to 0.5 %.

A particularly preferred combination is that which is sold under the trademark  
20 'Lamesoft', in particular 'Lamesoft PO65', a mixture of 20 to 40 % of glyceryl monooleate, 20 to 40 % of coco glucoside and water. This 'Lamesoft' product is added to the compositions in an amount in the range from 0.1 to 1 %, preferably from 0.1 to 0.5 %, more preferably from 0.25 to 0.5 %.

25 The amount of the composition on the wipe will be in the range from about 100 to about 400 %, preferably from about 200 % to about 400 %, expressed as the weight of the composition relative to the weight of the sheet in dry condition.

Preferred compositions are those based on emulsions prepared by the so-called  
30 phase inversion technique. The phase inversion technique is described in more detail by F. Förster, F. Schambil, and H. Tesmann in Int. J. Cos. Sci. 1990 (12) 217.

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According to this technique, oil-in-water formulations made with non-ionic emulsifiers typically undergo a phase inversion upon heating which means that within a particular temperature interval a change of the emulsion type takes place, i.e. from an oil-in-water to a water-in-oil emulsion. In this process the external continuous phase changes from being aqueous to an oily phase resulting in a drop of the electrical conductivity to virtually zero. The average temperature between that of maximal and of minimal conductivity is referred to as the phase inversion temperature ('PIT').

After heating to a temperature above the PIT, the emulsion is cooled below the PIT whereupon the inverse phase transfer takes place, i.e. from water-in-oil to oil-in-water. The resulting emulsions are usually referred to as 'PIT emulsions'.

The droplet size of the PIT emulsion depends on a number of factors. PIT emulsions with small droplet size can be obtained with emulsions forming micro-emulsions having a low surface tension between the oil and water phases at the phase inversion, or that form a laminar liquid crystalline phase.

Preferred are PIT emulsions that are finely dispersed, i.e. having a small droplet size and have low viscosity.

The oily phase in PIT emulsions comprises natural oils or natural oil derivatives, in particular of vegetal origin. Examples are linseed oil, palm oil, olive oil, castor oil, rapeseed oil, soja oil, and in particular peanut oil, coconut oil, sunflower oil and turnip seed oil. The oily phase may further comprise fatty components isolated from these natural oils, i.e. pure triglycerides or mixtures thereof, or the latter components having been prepared chemically. These so-called triglycerides are esters of glycerine with fatty acids or fatty acid mixtures. Preferred triglycerides are those glycerine esters derived from fatty acids, either saturated or unsaturated, having from 10 to 24, particularly from 14 to 20, preferably from 16 to 18 carbon atoms, for example palmitic, heptadecanoic, oleic or stearic acid, or mixtures thereof. Particularly preferred is glyceryl stearate, also referred to as stearin.

The oily phase may further comprise alkyl esters of fatty acids, wherein the alkyl group has from 1 to 4 carbon atoms. Preferred are C<sub>1-4</sub> alkyl esters of C<sub>16-18</sub> fatty acids, for example of palmitic, heptadecanoic, or stearic acid, in particular the methyl or ethyl esters, including mixtures thereof.

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Of particular interest are oily phases that comprise a vegetable oil or a triglyceride in combination with an alkyl ester of a fatty acid.

The PIT emulsion further contains a non-ionic emulsifier.

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Suitable non-ionic emulsifiers comprise:

polyethoxylated or propoxylated fatty alcohols, fatty acids or C<sub>8-15</sub> alkylphenols, having 2 to 30 ethoxy units and 0 to 5 propoxy units, or 1 to 5 propoxy units, prepared by reacting the starting alcohols with ethylene or propylene oxide;

15 mono- or diesters of polyethoxylated glycerine that with saturated or unsaturated C<sub>12-18</sub> fatty acids, having 1 to 30 ethoxy units;

glycerin mono- or diesters and sorbitan mono- or diesters of saturated or unsaturated fatty acids as well as ethoxylated derivatives thereof, the latter in particular having from 1 to 30 ethoxy units;

20 C<sub>8-22</sub> alkyl mono- or oligoglucosides as well as ethoxylated derivatives thereof, the latter in particular having from 1 to 30 ethoxy units;

ethoxylated castor oil or hydrogenated castor oil, in particular having from 1 to 30 ethoxy units;

25 polyol fatty acid esters and in particular polyglycerine fatty acid esters, more in particular ricinoelic acid or hydroxy stearic acid esters; for example polyglycerine poly ricinoleic acid or polyglycerine poly 12-hydroxystearate; and mixtures thereof;

glycerine, polyglycerine, mono- and di-pentaerythrite, sugar derived alcohols such as sorbitol, alkylglucosides and polyglucosides, partially esterified with one or more fatty acids or fatty acid mixtures;

30 trialkylphosphates as well as polyethoxylated derivatives thereof, the latter in particular having from 1 to 30 ethoxy units;

wool wax alcohols;

polysiloxane-polyalkyl-polyether copolymers and derivatives thereof;

mixed ethers of pentaerythrite, fatty acids, citric acid and fatty alcohols



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polyalkylene glycols;  
glycerine carbonate.

As used herein the term fatty acid refers to saturated or unsaturated, straight or  
5 branch chained alkanolic acids, optionally substituted with one or more hydroxy groups.

Particular useful emulsifiers comprise an emulsifier system containing a mixture  
of a hydrophilic and hydrophobic emulsifier.

Hydrophilic emulsifiers comprise ethoxylated fatty alcohols or fatty acids.

10 Examples of the former are ethoxylated C<sub>16-22</sub> alcohols such as for example cetyl,  
palmoleyl, stearyl, isostearyl and oleyl alcohol and mixtures thereof wherein the  
number of ethoxyl groups per molecule is in the range of 1 to 35, preferably from 1 to  
20, more preferably from 10 to 20.

Examples of ethoxylated fatty acids are ethoxylated C<sub>12-22</sub> alkylcarbonic acids  
15 such as, for example, palmitinic, palmoleinic, stearic, isostearic acid and mixtures  
thereof, wherein the number of ethoxy groups is in the range of 5 to 50, in particular  
from 15 to 35.

Hydrophobic emulsifiers comprise polyethoxylated glycerin fatty acid mono- and  
diesters having 1 to 30 ethoxy units, i.e. polyethoxylated glycerin wherein between 1 and  
20 2 of the hydroxy functions have been esterified with 1 or 2 fatty acids or fatty acid  
mixtures.

The w/w ratio of the hydrophilic emulsifier components to the hydrophobic  
emulsifier components is in the range of 10 : 90 to 90 : 10, in particular 25 : 75 to  
25 75:25, more in particular in the range of 40 : 60 to 60 : 40.

The PIT emulsions for use in the products according to the invention in particular  
contain from 20 to 90 %, more in particular from 30 to 80 % and preferably 30 to 60 %  
of water. The remainder making up the formulation comprises the oily phase, the  
emulsifiers and other components. The oily phase typically comprises from 10 to 80 %,   
30 in particular from 40 to 70 % of the formulation. Preferred are emulsion wherein the  
w/w ratio of the oil and aqueous phases are about 1 : 1. The emulsifiers are present in  
an amount that is in the range of 1 to 25 %, in particular 5 to 20 % and more in  
particular 5 to 15 %.

The phase inversion temperature typically is in the range from 20 to 95 °C, in particular in the range from 40 to 95 °C.

The PIT lotions for use in the present invention will contain one or more light absorbing or light reflecting substances, in particular those mentioned herein. These can be hydrophilic or hydrophobic. In the former instance these substances will be solved into the aqueous phase while in the latter into the oily phase.

Particular PIT emulsions that can be used in the compositions of this invention are described for example in WO-00/51427 and in WO-00/71676

The compositions prepared by the phase inversion technique preferably have a viscosity of below 100 mPas. The average particle size of the oil droplets is in the range of 50 to 300 nm, in particular in the range of 50 to 200 nm, and preferably is 100 nm or smaller, e.g. between 70 and 90 nm. These compositions are particularly attractive in that they show good spreading and impregnating properties.

Another group of preferred compositions are the so-called 'aqueous solutions'. These in particular comprise aqueous based compositions that are not emulsions, or do not contain emulsions, or contain only small amounts of emulsions. Small amounts in this context mean less than about 10%, in particular less than 5%, more in particular less than 3% or less than 1%, w/w expressed in relation to the total weight of the composition. Said aqueous based formulations contain glyceryl monoleate and/or cocoglucoside in the amounts specified herein. Also in case of aqueous solutions, a particularly preferred combination of monoleate and cocoglucoside is the 'Lamesoft<sup>TM</sup>' product mentioned hereinabove, in particular in the concentrations also mentioned above.

The aqueous solutions may contain further ingredients, in particular the further ingredients mentioned herein. A particular subtype of aqueous solutions are for cleansing, i.e. so called 'cleansing lotions'. The latter contain specific cleansing agents such as surfactants and optional further components such as emollients, fragrances, preservatives, actives and the like. Small amounts of solubilizers may be added to solubilize oily components, e.g. oily fragrances or oily actives. Of specific interest are

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the betaine surfactants. Specific emollients are polyalcohols such as glycerine, ethylene, glycol, propylene glycol and the like.

5 The compositions for use in the products of the invention may further contain skin caring and/or active ingredients like emollients, oils, plant extracts, vitamins, and the like. Oils can be of natural or synthetic origin, e.g. vegetable oils or mineral oils or the group of silicones.

10 The compositions may further contain anti-oxidants in particular in case where the  $C_{12-30}$  carboxylic acid mono- or diglyceride is unsaturated, and especially where it is poly-unsaturated such as in the case where the  $C_{12-30}$  carboxylic acid is an essential fatty acid.

15 Suitable anti-oxidants are agents that block oxidation or autoxidation of the components in the compositions for use in the products of the invention, in particular of the  $C_{12-30}$  carboxylic acid mono- or diglyceride component. Examples of anti-oxidants are e.g. sulfites, e.g. sodium sulfite, tocopherol or derivatives thereof, vitamin E or derivatives thereof, ascorbic acid or derivatives thereof, citric acid, propyl gallate, chitosan glycolate, cysteine, N-acetyl cysteine plus zinc sulfate, thiosulfates, e.g.  
20 sodium thiosulfate, polyphenoles, tocopherol, butylhydroxytolunene (BHT), butylhydroxyanisol (BHA), lecithine, and the like.

The emollients that may be added comprise lipids like lanolin, lanolin alcohols, lanolin acids, polyethoxylated or acylated lanolin or lanolin derivatives, lecithin and  
25 lecithin derivatives, fatty alcohols, either linear or branched with chain lengths between  $C_6$  and  $C_{40}$ , and their esters with organic acids, e.g. carbonic acids or polyacids containing between 2 and 30 C atoms, branched, aromatic or linear including hydroxy or amino acids, fatty acids and fatty acid esters with alcohols or poly alcohols containing between 2 and 40 C atoms, branched, aromatic or linear, sterols found in the  
30 unsaponifiable fraction of e.g. avocado oil, almond oil, soybean oil, etc. like soy phytosterol,  $\beta$ -sitosterol,  $\beta$ -sitosteryl laurate,  $\beta$ -sitosteryl stearate, etc. natural and synthetic waxes, e.g. bees wax, purcelline, shea butter, cocoa butter, ceresin, ozokerit, vaseline, micro wax, carnauba wax candelilla wax and alike, substituted cyclohexanes

like di-n-octylcyclohexane, Guerbet carbonates, e.g. bis-2-octyl dodecylcarbonate, dialkyl ethers like di-n-octyl ether, and the like.

5 Examples of oils are natural oils, e.g. almond oil, soybean oil, wheat germ oil, avocado oil, jojoba oil, linseed oil, sesame oil, walnut oil, sunflower oil, olive oil, etc., mineral and paraffin oil and synthetic oils comprising mono-, di-, triglycerides as well as mixtures thereof.

10 The compositions may also contain film-forming substances like chitosan and derivatives thereof, derivatives of poly acrylic acid, polyvinyl pyrrolidone and its derivatives, and the like.

The compositions may further contain active ingredients, e.g. anti-microbials such as complexes of PVP and hydrogen peroxide, anti-inflammatories as, plant  
15 extracts, bisabolol, panthenol, tocopherol, actives for anti-stinging, anti-irritants, anti-dandruffs, for anti-ageing e.g. retinol, melibiose etc. Other suitable actives are e.g. *Medicago officinalis*, *Actinidia chinensis*, allantoin, *Aloe barbadensis*, *Anona cherimolia*, *Anthemis nobilis*, *Arachis hypogaea*, *Arnica montana*, *Avena sativa*, beta-carotene, bisabolol, *Borago officinalis*, butylene glycol, *Calendula officinalis*, *Camellia*  
20 *sinensis*, camphor, *Candida bombicola*, capryloyl glycine, *Carica papaya*, *Centaurea cyanus*, cetylpyridinium chloride, *Chamomilla recutita*, *Chenopodium quinoa*, *Chinchona succirubra*, *Chondrus crispus*, *Citrus aurantium dulcis*, *Citrus grandis*, *Citrus limonum*, *Cocos nucifera*, *Coffea arabica*, *Crataegus monogina*, *Cucumis melo*, dichlorophenyl imidazoldioxolan, *Enteromorpha compressa*, *Equisetum arvense*,  
25 ethoxydiglycol, ethyl panthenol, farnesol, ferulic acid, *Fragaria chiloensis*, *Gentiana lutea*, *Ginkgo biloba*, glycerin, glyceryl laurate, *Glycyrrhiza glabra*, *Hamamelis virginiana*, heliotropine, hydrogenated palm glycerides, citrates, hydrolyzed castor oil, hydrolyzed wheat protein, *Hypericum perforatum*, *Iris florentina*, *Juniperus communis*, *Lactis proteinum*, lactose, *Lawsonia inermis*, linalool, *Linum usitatissimum*, lysine,  
30 *Magnesium aspartate*, *magnifera indica*, *Malva sylvestris*, mannitol, mel, *Melaleuca alternifolia*, *Mentha piperita*, menthol, menthyl lactate, *Mimosa tenuiflora*, *Nymphaea alba*, olaflur, *Oryza sativa*, panthenol, paraffinum liquidum, PEG-20M, PEG-26 jojoba acid, PEG-26 jojoba alcohol, PEG-35 castor oil, PEG-40 hydrogenated castor oil, PEG-

60 hydrogenated castor oil, PEG-8 caprylic/capric acid, *Persea gratissima*, petrolatum, potassium aspartate, potassium sorbate, propylene glycol, *Prunus amygdalus dulcis*, *prunus armeniaca*, *Prunus persica*, retinyl palmitate, *Ricinus communis*, *Rosa canina*, *Rosmarinus officinalis*, *rubus idaeus*, salicylic acid, *Sambucus nigra*, sarcosine,  
5 *Serenoa serrulata*, *Simmondsia chinensis*, sodium carboxymethyl betaglucan, sodium cocoyl amino acids, sodium hyaluronate, sodium palmitoyl proline, stearoxytrimethylsilane, stearyl alcohol, sulfurized TEA-ricinoleate, talcum, *thymus vulgaris*, *Tilia cordata*, tocopherol, tocopheryl acetate, trideceth-9, *Triticum vulgare*, tyrosine, undecylenoyl glycine, urea, *Vaccinium myrtillus*, valine, zinc oxide, zinc  
10 sulfate and the like.

The products according to the invention can be made by coating the said composition onto or impregnating it into the sheet material. The term coating also comprises techniques such as printing and spraying of the composition on the sheet. In  
15 a preferred embodiment, wipes are impregnated with a lotion prepared according to the PIT procedure.

The compositions for use in the products of the invention are prepared by conventional methods. In a particular embodiment a concentrate is made which  
20 subsequently is diluted with a suitable aqueous medium to obtain the composition which is applied to the sheet. In a particular embodiment the concentrate contains C<sub>12-30</sub> carboxylic acid mono- or diglyceride and optionally also alkyl glucoside and other components, e.g. one or more emulsifiers, one or more preservatives, fragrances and the like. The concentrate may also be formulated as an emulsion, in particular as an oil-  
25 in-water emulsion, more in particular as an oil-in-water emulsion prepared according to the PIT technique. In that instance the concentrate will contain appropriate emulsifiers, in particular those mentioned herein.

The concentration of C<sub>12-30</sub> carboxylic acid mono- or diglyceride and optionally  
30 also alkyl glucoside and other components in the concentrate may be from about 2.5 to about 10 times, preferably from about 5 to about 7.5 times higher than the concentration of thereof in the end formulation

Hence the invention concerns a process for preparing a product as defined herein, said process comprising contacting a suitable carrier with a composition as described herein, in particular with a composition containing C<sub>12-30</sub> carboxylic acid mono- or diglyceride. In particular said process comprises impregnating a wipe with a liquid or lotion as described herein, more in particular impregnating or spraying a wipe with a liquid or lotion. The latter preferably is a PIT formulation as described herein. In a preferred execution use is made of a composition containing glyceryl mono- or dioleate.

In a particular execution, the carrier material is cut into strips the transversal size of which being similar to the size of the sheet, in particular the tissue or wipe. Subsequently the carrier strips are folded according to methods generally known and applied in the art. The thus folded strips are moistened with a liquid composition as defined herein, in particular with a PIT composition, said moistening preferably comprising spraying or dripping. Or the fabric strips can first be moistened and subsequently be folded.

The strips can also be impregnated with the composition by immersing in or running the strip through a bath containing the composition. They can also be sprayed or printed with the composition.

In a further step, the strips are cut so that the desired size of the sheets, in particular of the wipes, is obtained. The thus obtained sheets (or wipes) can be packed individually or can be stacked in a determined number, e.g. , e.g. a number between 10 and 30, preferably between 15 and 25, most preferably about 20, or a number between 50 and 100, preferably between 60 and 80, most preferably about 72, and the stack then packed in a suitable package, for example a plastic wrap, box and the like.

The products according to the invention can take the form of baby or adult wipes and can be used in a wide range of applications as personal care products, comprising, for example, baby cleansing wipes, face or body cleansing wipes, wipes for make-up removal, wipes for skin treatment or skin conditioning such as for example skin moisturization, insect repellent wipes, sunscreen wipes, and the like.

The products of the present invention have superior softness, feel and cleansing properties. Softness is the tactile sensation perceived when the consumer holds the product, rubs it across the skin, or crumples it with the hand.

5 The products show increased softness of the sheet material, more specifically they show increased softness of the non-woven fabric. Additionally, they result in an improvement of the softness of the skin in that it has a softer feel or an improved sensorial softness after application of the wipe. They further result in increased skin smoothness and skin elasticity.

10 As used herein applying or application to the skin comprises any action contacting the product to the skin e.g. by rubbing across the skin, bathing, dabbing, wetting and the like.

The products of the invention, when applied to the skin, cause a sufficient or an effective amount of a C<sub>12-30</sub> carboxylic acid mono or diglyceride and/or of C<sub>8-20</sub> alkyl glucoside, and in particular an effective amount of glyceryl monooleate and/or of C<sub>8-20</sub> alkyl glucoside, to be released and thereby administered to the skin. The same applies equally to products wherein the composition contains one or more other active ingredients, i.e. these are also caused to be released and thereby administered in a sufficient or effective amount. Additionally the present products allow an even  
20 distribution of these agents or active ingredients onto the skin.

The C<sub>12-30</sub> carboxylic acid mono- or diglyceride and/or of C<sub>8-20</sub> alkyl glucoside ingredients, and in particular the glyceryl monooleate and/or of C<sub>8-20</sub> alkyl glucoside ingredients, in the compositions described herein cover or coat the fibers of the fabric.  
25 This is particularly the case when using a PIT composition. A fabric being impregnated or coated with a composition as described herein can be allowed to dry resulting in the fabric's fibres being coated or covered by C<sub>12-30</sub> carboxylic acid mono- or diglyceride and/or of C<sub>8-20</sub> alkyl glucoside ingredients, or in particular by the glyceryl monooleate and/or of C<sub>8-20</sub> alkyl glucoside ingredients.

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The softness of sheet products can be demonstrated by a number of tests. One such test comprises mounting the sheet to a longitudinal plate at one end of which an object of defined mass is placed. Subsequently that end of the plate is lifted until the

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object starts gliding downwardly. The angle of the plate at the moment where the weight starts gliding is measured and compared with that of standard sheets.

Softness of the skin can be measured by standardized consumer panel tests in sensory evaluation tests. It can also be quantified in a torque test in which a cylindrical object is pressed against the skin with a defined force and subsequently the object is subjected to a defined torque force and the angle by which the object can be turned is measured.

Skin softness can also be determined by in vivo skin topometry in which the skin surface profile is measured. The rougher the skin the more irregular the skin's surface topology will be.

#### Examples

As used in these examples 'Nipaguard IPF' is a trademark for a preservative containing 10 % of iodopropyl butylcarbamate (IPBC).

'Emulgade SE-PF<sup>TM</sup>' is Glyceryl stearate/ Cetareth 20<sup>TM</sup> / Cetareth 12<sup>TM</sup> / Cetaryl alcohol/ cetyl palmitate mixture  
 'Eumulgin B2<sup>TM</sup>' is Cetareth 20<sup>TM</sup>;  
 'Cetareth-20<sup>TM</sup>' is ethoxylated cetostearyl alcohol having 20 ethoxy units;  
 'Cetareth-12<sup>TM</sup>' is ethoxylated cetostearyl alcohol having 12 ethoxy units;  
 'Lamesoft PO65 is a mixture of 20 to 40 % of glyceryl monooleate, 20 to 40 % of coco glucoside and water.

#### Example 1

Preparation of a concentrate

Emulgade SE-PF <sup>TM</sup>	8.300%
Eumulgin B1 <sup>TM</sup>	4.700%



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	Mineral Oil	15.000%
	Phenoxyethanol	0.830%
	Nipaguard IPF <sup>TM</sup>	0.500%
5	Fragrance	0.550%
	Aqua	68.870%
	Lamesoft PO65 <sup>TM</sup>	1.250%

- 10        The above ingredients are mixed and subsequently slowly warmed above the PIT temperature. This is determined by measuring the electrical conductivity of the mixture. Subsequently the mixture is allowed to cool slowly to room temperature. The thus obtained PIT formulation is has the appearance of a clear solution with low viscosity.

15

Example 2

	Aqua	78.886 %
	Tetrasodium EDTA (chelating agent)	0.200 %
20	Concentrate of example 1	20.000 %
	Premix	
	Phenoxyethanol	0.834 %
25	Cetylpyridinium chloride (CPC)	0.050 %
	Citric Acid Monohydrate	0.030 %

- 30        Tetrasodium EDTA and water are mixed and to this mixture there is added the required quantity of the concentrate as prepared in example 1. Subsequently a premix of phenoxyethanol and CPC is made and this is added to the mixture. Finally, citric acid is added.

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Example 3

## Preparation of a concentrate

## 5 Pre-mixture A

glyceryl monolinolenate	33%
coco glucoside	33%
water	ad 100%

10

Both ingredients are mixed with water and this mixture is used in the preparation of the concentrate as outlined hereinafter.

Emulgade SE-PF <sup>TM</sup>	8.300%
15 Eumulgin B1 <sup>TM</sup>	4.700%
Mineral Oil	15.000%
Phenoxyethanol	0.830%
Nipaguard IPF <sup>TM</sup>	0.500%
Fragrance	0.550%
20 Aqua	68.870%
Concentrate A	1.250%

25 The above ingredients are mixed and subsequently slowly warmed above the PIT temperature. This is determined by measuring the electrical conductivity of the mixture. Subsequently the mixture is allowed to cool slowly to room temperature. The thus obtained PIT formulation is has the appearance of a clear solution with low viscosity.

30

Example 4

Aqua	78.886 %
tetrasodium EDTA (chelating agent)	0.200 %

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	Concentrate of example 1	20.000 %
	Premix	
	Phenoxyethanol	0.834%
5	Cetylpyridinium chloride (CPC)	0.050%
	Citric Acid Monohydrate	0.030%

10 Tetrasodium EDTA and water are mixed and to this mixture there is added the required quantity of the concentrate as prepared in example 1. Subsequently a premix of phenoxyethanol and CPC is made and this is added to the mixture. Finally, citric acid is added.

#### Example 5

15

	%	weight (g)
Aqua	95.38720	11.44646
Cocamidopropyl Betaine	1.00000	0.12000
Lamesoft PO65 <sup>TM</sup>	0.50000	0.06000
Propylene Glycol	0.50000	0.06000
Phenoxyethanol	0.70000	0.08400
Butylparaben	0.07500	0.00900
Methylparaben	0.15500	0.01860
Propylparaben	0.10000	0.01200
Perfume	0.05000	0.00600
Polysorbate 20	1.50000	0.18000

20 The ingredients listed above are added in the sequence of their listing to the water while stirring.

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Example 6

	%	weight (g)
5		
Aqua	95.38720	11.44646
Cocamidopropyl Betaine	1.00000	0.12000
Glyceryl monolinolenate	0.16666	0.02000
Coco glucoside	0.16666	0.02000
Water	0.16666	0.02000
Propylene Glycol	0.50000	0.06000
Phenoxyethanol	0.70000	0.08400
Butylparaben	0.07500	0.00900
Methylparaben	0.15500	0.01860
Propylparaben	0.10000	0.01200
Perfume	0.05000	0.00600
Polysorbate 20	1.50000	0.18000

The ingredients listed above are added in the sequence of their listing to the water while stirring

Example 7

10

Dry hydro-entangled carrier material made of fabric having a surface weight of 50 g/m<sup>2</sup> was cut into strips. The strips were sprayed in the conventional manner with the liquid as prepared in examples 2 - 5. Liquid addition was set at 6 g per wipe. Subsequently the strips were folded and cut.

15

Claims

1. A product comprising a porous or absorbent sheet and a composition that contains a C<sub>12-30</sub> carboxylic acid mono- or diglyceride.  
5
2. A product according to claim 1 wherein the composition additionally contains a C<sub>8-20</sub> alkyl glucoside.
3. A product according to claim 2 wherein the composition additionally contains coco-  
10 glucoside.
4. A product according to claims 2-3 wherein the composition contains an unsaturated C<sub>12-30</sub> carboxylic acid monoglyceride.
- 15 5. A product according to claims 2 -3 wherein the composition contains an unsaturated C<sub>16-22</sub> carboxylic acid monoglyceride.
6. A product according to claims 1 or 2 wherein the C<sub>12-30</sub> carboxylic acid mono- or diglyceride is glyceryl mono- or dioleate.  
20
7. A product according to claims 1 or 2 wherein the C<sub>12-30</sub> carboxylic acid mono- or diglyceride is glyceryl monooleate.
8. A product according to any of claims 1 to 7 wherein the composition is a liquid  
25 which is coated onto or impregnated into said sheet.
9. A product according to claim 8 wherein the liquid is an oil in water emulsion.
10. A product according to claim 9 wherein the oil in water emulsion is prepared  
30 according to the phase inversion technique.

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11. A product according to any of claims 1 to 10 wherein the composition contains C<sub>12-30</sub> carboxylic acid mono- or diglyceride in an amount which is in the range from 0.01 to 2 %.
- 5 12. A product according to any of claims 2 to 10 wherein the composition for contains a C<sub>8-20</sub> alkyl glucoside in an amount in the range from from 0.01 to 2 %.
13. A product according to claim 12 wherein the ratio of the amount of C<sub>12-30</sub> carboxylic acid mono- or diglyceride to the C<sub>8-20</sub> alkyl glucoside is in the range from 2 :
- 10 1 to 1 : 2.
14. A product according to claim 13 wherein the ratio of the amount of C<sub>12-30</sub> carboxylic acid mono- or diglyceride to the C<sub>8-20</sub> alkyl glucoside is about 1 : 1.
- 15 15. The use of C<sub>12-30</sub> carboxylic acid mono- or diglyceride or of a combination of the latter with a C<sub>8-16</sub> alkyl glucoside to improve the softness of a porous or absorbent sheet.
16. The use of a product as claimed in any of claims 1 to 14 to improve skin softness.

20

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(57) Abstract: This invention relates to products comprising a porous or absorbent sheet, in particular a wipe, and a liquid, in particular an oil-in-water emulsion, wherein the liquid contains C<sub>12-30</sub> carboxylic acid mono- or diglyceride.



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## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00 64503 A (KIMBERLY CLARK CO) 2 November 2000 (2000-11-02) page 1, line 3-8 page 26, line 34 -page 27, line 10; example 3; table 3 ---	1-16
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Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 02/02864

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(54) Title: SKIN CARE PRODUCTS WITH IMPROVED SKIN AND MATERIAL SOFTNESS

(57) Abstract: This invention relates to products comprising a porous or absorbent sheet, in particular a wipe, and a liquid, in particular an oil-in-water emulsion, wherein the liquid contains C<sub>12-30</sub> carboxylic acid mono-or diglyceride.



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